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InterDigital Communications Corporation
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August 9, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. - Room 222
Washington, D.C. 20554

**Re: InterDigital Communications Corporation
Comments in RM 8837**

Dear Mr. Caton:

Transmitted herewith are an original and 10 copies of the comments of InterDigital Communications Corporation in the above referenced proceeding.

Please direct any inquiries regarding this matter to the undersigned.

Sincerely,


Brian G. Kiernan
Vice President

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Petition for Allocation of Radio Spectrum) RM No. 8837
in the 2 GHz Band for the Provision)
of Wireless Fixed Access Local Loop Services)

COMMENTS OF INTERDIGITAL COMMUNICATIONS CORPORATION

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I. INTRODUCTION

InterDigital Communications Corporation ("InterDigital") respectfully submits these comments in support of the DSC petition for the allocation of spectrum for the provision of wireless fixed access local loop service.

InterDigital is a wireless technology manufacturer that has developed an advanced spectrum efficient digital radio system ("the Ultraphone") which operates in the U.S. under current FCC Basic Exchange Telecommunications Radio Service (BETRS) rules.¹ This system provides fixed wireless local loops between telephone central offices and customer premises. InterDigital has also developed advanced digital radio systems based on the Ultraphone which are used internationally to provide wireless loops.

¹ 47 C.F.R. Section 22.757.

Additionally, InterDigital is developing an integrated wireless local loop system based on its proprietary broadband code division multiple access (CDMA) technology. Using CDMA in a broadband configuration will permit wireless local loop systems to provide an array of broadband and narrowband consumer services currently unavailable on the copper infrastructure that dominates the loop in the U.S. market. These services, such as high speed Internet access and ISDN services, along with rapid provisioning of high quality voice service could be made available to urban and rural areas alike with a spectrum allocation for a true wireless local loop fixed access service.

In the U.S. today, wireless local loops (WLL) that are used to provide basic telephone service are primarily in rural locations. Two factors force WLL to be primarily a rural application; (1) the high cost of long rural local loops results in a favorable radio/wire economic tradeoff. In effect it's less expensive to use radio to provision long local loops; and (2) the current spectrum (454 MHz) used by the telephone industry for wireless local loops is unavailable outside of rural areas.

The vast majority of WLL applications are licensed within the BETR service. BETRS installations throughout the country use advanced digital radio equipment operating in the 454 MHz band. Although there are frequency authorizations for BETRS at 150 and 800 MHz, there is no equipment available in these bands that can provide telephone quality, BETRS service. As a result, nearly all BETRS installations rely on the availability of 26 channels at

454 MHz currently shared by BETRS and commercial mobile radio service (CMRS) providers generally and paging companies specifically.

These 26 channels are only available in remote and rural areas and, with the success of BETRS and the increasing licensing of these channels to rural paging, many rural areas have no channels available. Paging interests have generally licensed these frequencies in most parts of the country and have in the last several years begun to license rural paging systems in these frequencies. The BETRS applications must therefore compete with paging for these same 26 channels. As a result, spectrum availability is a critical factor in any new BETRS applications.

The Commission is quite aware of the seriousness of the spectrum problem in rural areas. However, they have ignored the pleas of the rural telephone companies for relief. The justification for adequate spectrum for BETRS has been a matter of record before the FCC for over three years. On November 9, 1992, a Petition for Rule Making ("Petition") asking for access, on a shared basis, to 12 additional channels for the provision of BETRS was filed by the original BETRS petitioners.²

The Petition was jointly filed by the United States Telephone Association ("USTA"), the National Telephone Cooperative Association ("NCTA"), the Organization for the Protection and Advancement of Small Telephone Companies ("OPASTCO"), the National Rural Telephone Association ("NRTA")

² Public Notice Report No. 1923 (RM-8159, released Jan. 8, 1993).

and the Rural Electrification Administration ("REA")
(collectively "Petitioners").

In that Petition, the Petitioners argued for co-primary sharing between BETRS and Air-to-Ground Radiotelephone Service of the 12 Air-to-Ground ("ATG") Radiotelephone channels immediately adjacent to the 26 454 MHz channels that BETRS currently shares - with other licensees (predominately paging).

The proposal put forth in the Petition establishes a geographical separation between BETRS and ATG systems sufficient to insure that no interference to either BETRS or current ATG operation would occur.

The Commission has taken no action on that petition for over three and a half years. The lack of Commission action on this petition may be partially blamed on the mistaken notion within the Wireless Bureau that cellular spectrum could and would be used to provide basic telephone service in rural areas.

That same flawed logic, that other CMRS providers may fill the need for fixed wireless loops (including rural loops), is reflected in the FCC's recent notice in WB Docket No. 96-6.³ Some commenters will contend in response to this petition that CMRS licensees can and will provide fixed wireless local loops and therefore the allocation is not needed.

³ Flexible Service Offerings in the Commercial Mobile Radio Services, Notice of Proposed Rulemaking, FCC 96-17 (released January 25, 1996).

The facts, however, prove otherwise. The notion that CMRS systems can provide the type of services described in this petition is false and the record in the above BETRS proceeding provides ample data to that effect. Moreover, the fact that rural cellular systems provide no BETRS systems after more than a decade of rural service, provides convincing proof that mobile systems (including PCS) will never provide the level of fixed access service that a dedicated system, such as current BETRS systems or the system proposed in this proceeding can provide.

DISCUSSION

In this proceeding DSC Communications Corporation ("DSC") requests the Commission initiate a proceeding to allocate radio spectrum in the "2 GHz" band for the purpose of providing wireless fixed access local loop service.

The basis for the request is the need for "facilities-based local competition". They contend that a competitive alternative to the copper-based, monopoly controlled, local loop will permit a rich array of services at competitive prices to finally break the local loop bottleneck.

Moreover, the spectrum allocation requested by this petition will permit broadband radio-based services not currently available from the narrowband CMRS systems currently deployed or planned to deploy. For example, high speed Internet access to residential users could be provided by the type of dedicated system described by the petitioner. Future broadband high-speed

data service could also be supported.

Most importantly, the allocation of spectrum for this new service in the competitive environment for the huge residential market will spur the innovative genius of the high technology digital radio industry. New Data/voice/video products operating between and within the hybrid residential fixed and portable marketplace will advance the state-of-the-art in digital radio technology and subsequently bring the benefits of broadband radio to all consumers. Similar to the revolution caused by the introduction of broadband fiber optics, broadband digital radio will change the nature of consumer telecommunications.

The petitioner correctly points out that the Commission's proposal in WB Docket No. 96-6 to allow CMRS providers to make fixed use of their mobile spectrum will not spark true competition for the "last mile," nor will it spur innovation.

The reasons why CMRS is not suitable for fixed wireless local loop applications are myriad and worth debating within the context of a rulemaking. However, what is not contentious is the poor record of CMRS in providing fixed wireless local loop. For example, FCC rules permit cellular carriers to provide BETRS service. In the 13 years that cellular has been in service not one rural BETRS installation is in place.

Further, 50 channels of SMR spectrum has been available since the inception of BETRS (January 1988) and no SMR-based BETRS systems have been deployed. In fact, the Commission/Industry has discussed dropping those channels from

the list of BETRS authorized spectrum because of non-use. Finally, PCS systems are just now coming on line and none of the mainstream technologies, CDMA, GSM and TDMA have introduced wireless access fixed units into their product line.

The result is that all of the A,B & C block PCS systems will be engineered for the mobile environment effectively precluding offering, on any large scale, a fixed wireless local loop in competition with the local exchange monopoly.

The D,E & F block PCS systems may offer an opportunity for PACS technology to provide a hybrid fixed and mobile service. But the chances are that with only 10 MHz of spectrum, any fixed access offered in these bands will be of limited utility and little competition to the incumbent LEC. In fact, because the incumbent LEC is authorized to bid in the D&E bands, the ultimate licensees may have little incentive to implement fixed wireless loops, especially in competition to the existing copper loop. Therefore, the use of PACS in providing a competitive alternative to the local bottleneck is limited at best.

Additionally, there are other troublesome issues connected with using a mobile engineered radio system in a fixed environment. The obvious one is backup power. In a wired basic telephone installation, dialtone is not lost during a power failure. In a wireless system engineered specifically for fixed operation, like the InterDigital BETRS system, a backup power supply was engineered during the development stage into the customer premise terminal of the wireless system.

CMRS systems, to the extent fixed units were contemplated, have not yet addressed the question of "what happens when the power fails?". Jury-rigged battery backups are not the answer nor are they a replacement for properly engineered fixed wireless systems, especially for the mass residential market.

In sum, urban areas will have many mobile wireless providers competing with each other on price and service. However, because of the equipment unavailability, none are suited to compete with the incumbent wireline provider for the huge fixed wireless residential market. At best, hybrid offerings will provide very little competition for the local loop and no advanced wireless services to consumers.

Competition has already begun in many urban areas. Up until now competitive LECs (C-LECs) in large cities have used fiber to compete for business customers concentrated in limited locations. To advance beyond their fiber rings to the ubiquitous residential market, a broadband radio service (like the one proposed in this petition) will be required to extend the advantages of broadband fiber to the consumer. Another potential competitor, cable TV has the same disadvantages of C-LECs. They can't extend their reach without sufficient radio bandwidth to take full advantage of their fiber and conduit plant.

In rural areas the situation is worse. The cellular experience in rural areas forecasts that wireless systems will be built only where there are concentrations of people (or

automobiles). These are also areas that have existing wireline phone service.

Accordingly, there is no incentive for a mobile licensee to develop a competitive rural wireless service to areas deprived of adequate telephone service. It didn't happen with rural cellular systems and it won't happen with rural PCS systems. Further, because of the FCC's flexible PCS rules which favor rural telcos, many of the incumbent LECs are also PCS licensees. These companies have no incentive to compete with their existing telephone plant to provide competitive, feature rich, radio-based service to their residential customers.

However, in rural areas a fixed wireless local loop service would not only bring competition to the loop but would also encourage a general improvement in the service provided.

With digital radio as a competitive alternative, many rural LECs will be forced to upgrade their existing plant to provide better quality service or see their customer base erode. Either way, the public interest wins. Improved telecommunications services to rural areas has been a policy objective of the U.S. for the last 60 years. With a competitive wireless radio service with sufficient spectrum the era of the halves and have nots would be over. Whatever advanced service that could be offered in large urban areas would instantly be available to rural areas served by advanced digital broadband radio systems.

CONCLUSION

This proceeding offers a immediate opportunity to encourage competition in the provision of basic telephone service to the huge domestic residential market, urban and rural.

The Commission should follow-up on this petition to aggressively pursue a dialogue on the issues surrounding the allocation of spectrum for a wireless fixed access local loop service.

Further, the Commission should act immediately on RM 8159 to provide relief for the BETRS spectrum shortage in rural America.

Respectfully submitted,



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August 9, 1996